

AMENDMENTS TO THE ABSTRACT

Please substitute the following paragraph(s) for the abstract now appearing in the currently filed specification:

Apparatus and method for modifying an object with electrons are provided, by which the object can be uniformly and efficiently modified with the electrons under a pressure substantially equal to atmospheric pressure even when having a relatively wide surface area to be treated. This method uses a cold-cathode electron emitter having the capability of emitting electrons from a planar electron emitting portion according to tunnel effect, and preferably comprising a pair of electrodes, and a strong field drift layer including nanocrystalline silicon disposed between the electrodes. The object is exposed to electrons emitted from the planar electron emitting portion by applying a voltage between the electrodes. ~~It is preferred that an energy of the emitted electrons is selected from a range of 1 eV to 50 keV, and preferably 1 eV to 100 eV.~~